Performance Measurement and Responsibility Accounting

Chapter 24

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Fundamental Accounting Principles

25th Edition

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Chapter 24 Learning Objectives

CONCEPTUAL

C1 Explain transfer pricing and methods to set transfer prices.

C2 Describe allocation of joint costs across products. (Appendix 24A)

ANALYTICAL

A1 Analyze investment centers using return on investment and residual income.

A2 Analyze investment centers using profit margin and investment turnover.

A3 Analyze investment centers using the balanced scorecard.

A4 Compute the number of days in the cash conversion cycle.

PROCEDURAL

P1 Prepare a responsibility accounting report using controllable costs.

P2 Allocate indirect expenses to departments.

P3 Prepare departmental income statements and contribution

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Learning Objective P1

Prepare a responsibility accounting report using controllable costs.

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Performance Evaluation

Large companies are easier to manage if divided into smaller units, called *divisions, segments,* or *departments.*

In decentralized organizations, decisions are made by unit managers and top management evaluates the performance of unit managers.

Cost center

Evaluated on their success in controlling actual vs. budgeted costs.

Profit center

Evaluated on their success in generating income.

Investment center

Evaluated on use of assets to generate income.

Learning Objective 24-2: Prepare a responsibility accounting report using controllable costs.

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Controllable versus Uncontrollable Costs

Controllable costs are costs a manager can determine or influence.

Uncontrollable costs are not within the manager's control or influence.

Learning Objective P1: Prepare a responsibility accounting report using controllable costs.

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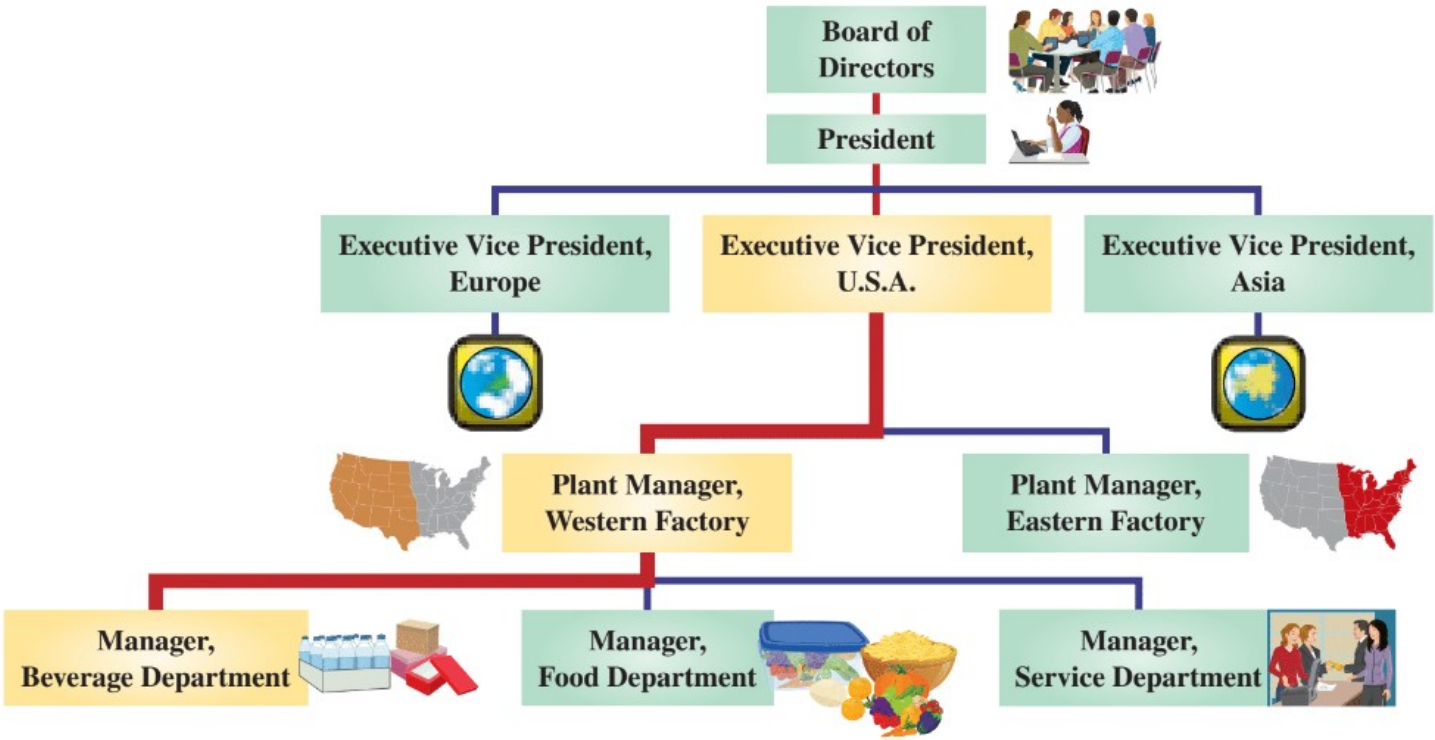
Responsibility accounting recognizes that control over costs and expenses belongs to several levels of management.

Exhibit 24.1



Learning Objective P1: Prepare a responsibility accounting report using controllable costs.

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Responsibility Accounting Performance Reports

Exhibit 24.2

Executive Vice President, U.S.A.

Controllable Costs	For July Budgeted	Actual	Over (Under) Budget
Salaries, plant managers	$ 80,000	$ 81,400	$ 1,400
Depreciation	21,000	21,000	0
Office costs	29,500	28,800	(700)
Western factory	**276,700**	**279,500**	**2,800**
Eastern factory	390,000	380,600	(9,400)
Totals	$797,200	$ 791,300	$(5,900)

Plant Manager, Western Factory

Controllable Costs	For July Budgeted	Actual	Over (Under) Budget
Salaries, department managers	$ 75,000	$ 76,500	$ 1,500
Building rent	10,600	10,600	0
Insurance	6,800	6,300	(500)
Beverage department	**79,600**	**79,900**	**300**
Food department	61,500	64,200	2,700
Service department	43,200	42,000	(1,200)
Totals	**$276,700**	**$279,500**	**$ 2,800**

Manager, Beverage Department

Controllable Costs	For July Budgeted	Actual	Over (Under) Budget
Direct materials	$ 51,600	$ 52,500	$ 900
Direct labor	20,000	19,600	(400)
Utilities	8,000	7,800	(200)
Totals	**$ 79,600**	**$ 79,900**	**$ 300**

Learning Objective P1: Prepare a responsibility accounting report using controllable costs.

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Learning Objective P2

Allocate indirect expenses to departments.

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Direct and Indirect Expenses

Direct expenses are costs traced to a department because they are incurred for that department's sole benefit.

Indirect expenses are costs incurred for the joint benefit of multiple departments; they cannot be traced to only one department.

Learning Objective P2: Allocate indirect expenses to departments.

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Allocating Indirect Expenses

Indirect and service department expenses are allocated to departments that benefit from them.

Allocated cost = Total cost to allocate × Percentage of allocation base used

Exhibit 24.3

Indirect Expense	Common Allocation Bases
Supervisor salaries	Number of employees in department
Rent and utilities	Square feet of space occupied
Advertising	Percentage of total sales
Insurance	Value of insured assets

Exhibit 24.4

Learning Objective P2: Allocate indirect expenses to departments.

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Allocating Service Department Expenses

- Service department costs are shared by two or more departments.
- Service departments include personnel, payroll, and purchasing.

Service Department	Common Allocation Bases
Office	Number of employees or sales in department
Personnel and payroll	Number of employees in department
Purchasing	Dollars of purchases or number of purchase orders processed
Maintenance	Square feet of space occupied

Exhibit 24.5

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Cost Allocation Demonstration

- Retail store pays an outside company to clean.
- Total cost of cleaning service is $800 per month.
- Management allocates cost across store's three departments based on square feet.

Department	Department Square Feet	Percent of Total Square Feet	Cost Allocated to Department
Jewelry	2,400	60% (2,400/4,000)	$480 (60% × $800)
Repair	600	15 (600/4,000)	120 (15% × $800)
Clothes	1,000	25 (1,000/4,000)	200 (25% × $800)
Totals	4,000	100%	$800

Exhibit 24.6

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Learning Objective P3

Prepare departmental income statements and contribution reports.

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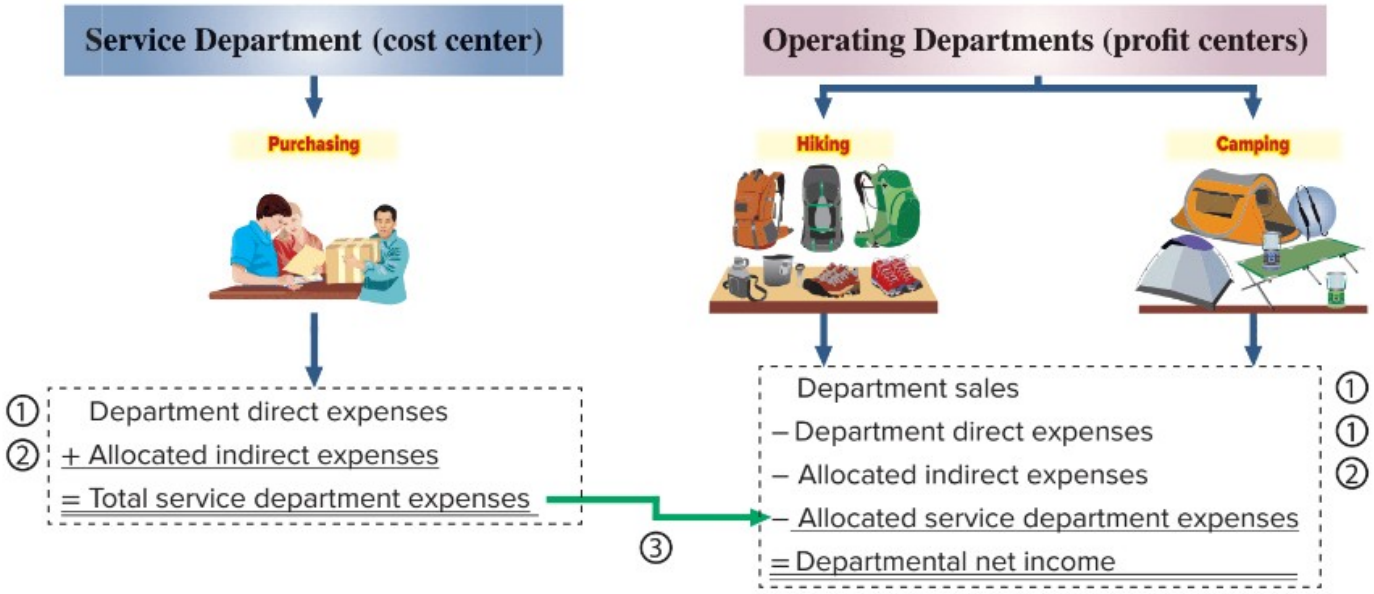
Departmental Income Statements

Exhibit 24.7

Departmental income = Department sales - Department direct expenses - Allocated indirect expenses - Allocated service department expenses

Exhibit 24.8



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Step 1:
Accumulate sales and direct expenses by department and total indirect expenses.

OUTDOOR GAL
Sales and Expenses Data

For Year Ended Dec. 31	Expenses	Service Department	Operating Departments	
		Purchasing	Hiking	Camping
Sales		$ 0	$136,200	$90,800
Cost of goods sold	$148,000	0	78,000	70,000
Direct expenses				
Salaries	41,000	15,000	14,020	11,980
Depreciation—Equipment	3,000	2,000	600	400
Indirect expenses				
Rent	12,000			
Advertising	4,000			
Total expenses	$208,000			

Exhibit 24.9

Learning Objective P3: Prepare departmental income statements and contribution reports.

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Step 2: Allocate indirect expenses to all departments.

Rent of $12,000 is allocated to all departments based on square feet.

Department	Square Feet	Percent of Total	Allocated Cost
Purchasing	1,800	20% (1,800/9,000)	$ 2,400
Hiking	2,700	30% (2,700/9,000)	3,600
Camping	4,500	50% (4,500/9,000)	6,000

Advertising of $4,000 is allocated only to operating departments based on sales.

Department	Sales*	Percent of Total	Allocated Cost
Hiking	$136,200	60% ($136,200/$227,000))	$ 2,400
Camping	90,800	40% ($90,800/$227,000)	1,600
Total	$227,000	100%	$4,000

*Sales are from Exhibit 24.9.

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Step 3:
Allocate service department expenses to operating departments.

Purchasing expenses of $19,400 is allocated based on number of purchase orders.

Department	Purchase Orders	Percent of Total	Allocated Cost
Hiking	840	70% (840/1,200)	$13,580
Camping	360	30% (360/1,200)	5,820
Total	1,200	100%	$19,400

OUTDOOR GAL
Departmental Expense Allocations

For Year Ended Dec. 31	Allocation Base	Expenses	Allocation of Expenses to Departments: Purchasing	Hiking	Camping
Direct expenses (Exhibit 24.9)					
Salaries		$41,000	$15,000	$14,020	$11,980
Depreciation—Equipment		3,000	2,000	600	400
Indirect expenses (Step 2)					
Rent	*Square feet of space*	12,000	2,400	3,600	6,000
Advertising	*Sales*	4,000	0	2,400	1,600
Total department expenses		60,000	19,400	20,620	19,980
Service department expenses (Step 3)					
Purchasing department	*Purchase orders*		(19,400)	13,580	5,820
Total expenses allocated to operating departments		$60,000	$ 0	$34,200	$25,800

Exhibit 24.10

Learning Objective P3: Prepare departmental income statements and contribution reports.

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Prepare Income Statements

Exhibit 24.11

OUTDOOR GAL
Departmental Income Statements
For Year Ended December 31

	Hiking	Camping	Combined
Sales	$136,200	$90,800	$227,000
Cost of goods sold	78,000	70,000	148,000
Gross profit	58,200	20,800	79,000
Expenses			
Salaries (Direct expenses)	14,020	11,980	26,000
Depreciation—Equipment (Direct expenses)	600	400	1,000
Rent (Allocated indirect expenses)	3,600	6,000	9,600
Advertising (Allocated indirect expenses)	2,400	1,600	4,000
Share of purchasing expenses (Allocated service department expenses)	13,580	5,820	19,400
Total expenses	34,200	25,800	60,000
Income (loss)	$ 24,000	$(5,000)	19,000

Learning Objective P3: Prepare departmental income statements and contribution reports.

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Departmental Contribution to Overhead

- **Departmental contributions to overhead equals sales minus cost of goods sold and direct expenses.**
- **Performance measure based on controllable costs.**

OUTDOOR GAL Departmental Contribution to Overhead			
For Year Ended December 31	**Hiking**	**Camping**	**Combined**
Sales	$136,200	$90,800	$227,000
Cost of goods sold	78,000	70,000	148,000
Gross profit	58,200	20,800	79,000
Direct expenses			
Salaries	14,020	11,980	26,000
Depreciation—Equipment	600	400	1,000
Total direct expenses	14,620	12,380	27,000
Departmental contribution to	**$**	**$ 8,420**	**$ 52,000**

Exhibit 24.12

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Learning Objective A1

Analyze investment centers using return on investment and residual income.

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Investment Centers

Investment center managers are responsible for revenues and costs and for the investment in operating assets.

Division	LCD	Phone
Income	$ 750,000	$ 370,000
Average assets	2,500,000	1,850,000

Learning Objective A1: Analyze investment centers using return on investment and residual income.

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Return on Investment (ROI)

$$\text{Return on investment} = \frac{\text{Income}}{\text{Average assets}}$$

Exhibit 24.13

Comparison of Return on Investment for LCD and Phone Divisions

	LCD	Phone
Income	$ 750,000	$ 370,000
Average assets	2,500,000	1,850,000
Return on Investment	30%	20%

Learning Objective A1: Analyze investment centers using return on investment and residual income.

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Residual Income

$$\text{Residual income} = \text{Income} - \text{Target income}$$

Exhibit 24.14

Target is 8% of average assets.

Division	LCD	Phone
Income	$ 750,000	$ 370,000
Less target income: $2,500,000 × 8%	200,000	
$1,850,000 × 8%		148,000
Residual income	$ 550,000	$ 222,000

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residual income.

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Learning Objective A2

Analyze investment centers using profit margin and investment turnover.

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Profit Margin and Investment Turnover

$$\text{Return on investment} = \text{Profit margin} \times \text{Investment turnover}$$

$$\text{Return on investment} = \frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average assets}}$$

Exhibit 24.15

	LCD	Phone
Sales	$9,375,000	$7,400,000
Income	750,000	370,000

Exhibit 24.16

		LCD	Phone
Profit margin:	$750,000/$9,375,000	8%	
	$370,000/$7,400,000		5%
Investment turnover:	$9,375,000/$2,500,000	3.75	
	$7,400,000/$1,850,		4.00

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Learning Objective A3

Analyze investment centers using the balanced scorecard.

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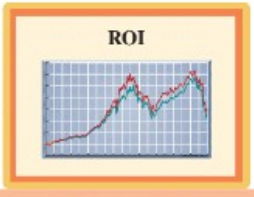
Balanced Scorecard

Collects information on key performance indicators within each of the four perspectives.

Exhibit 24.17



Customer	Internal Processes	Innovation/Learning	Financial
• Customer satisfaction rating	• Defect rates	• Employee satisfaction	• Net income
• # of new customers	• Cycle time	• Employee turnover	• ROI
• % of on-time deliveries	• Product costs	• $ spent on training	• Sales growth
• % of sales from new products	• Labor hours per order	• # of new products	• Profit margin
• Time to fill orders	• Accident-free days	• # of patents	• Residual income
• % of sales returned	• Warranty claims	• $ spent on research	• Investment turnover

Learning Objective A3: Analyze investment centers using balanced scorecard.

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Learning Objective C1

Explain transfer pricing and methods to set transfer prices.

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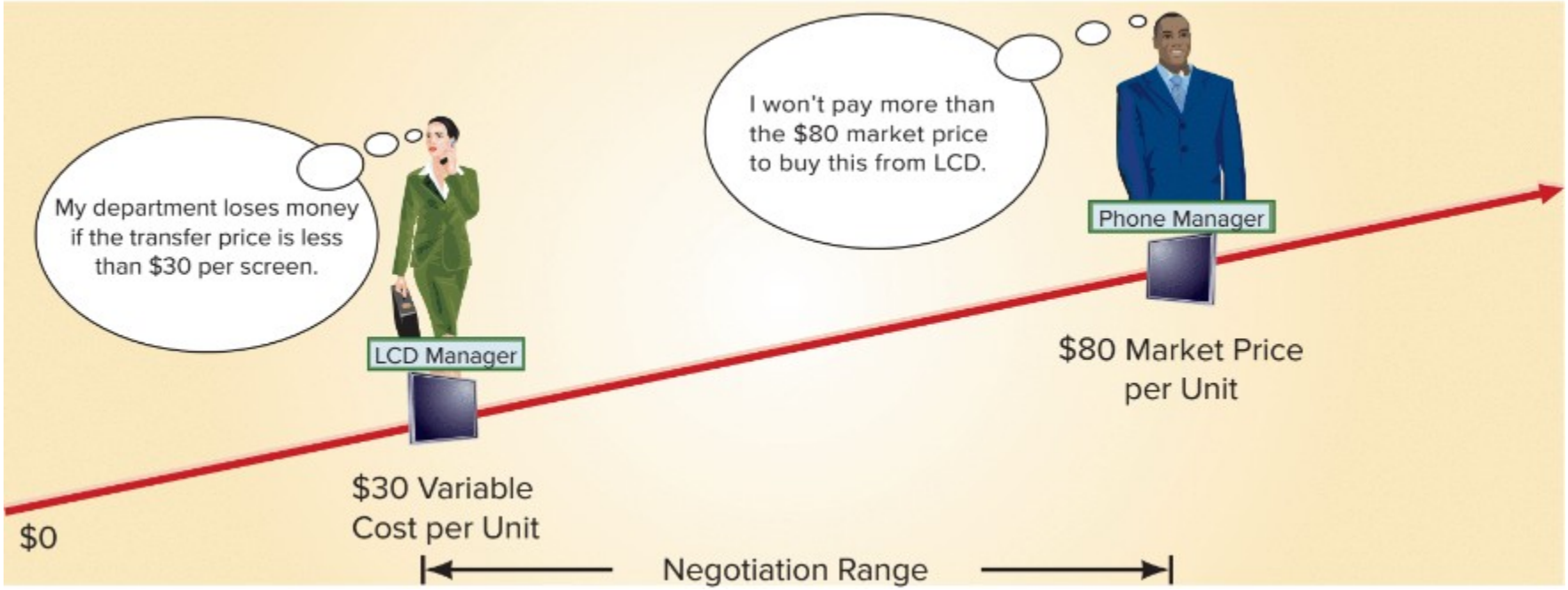
Transfer Pricing

A transfer price is price to record transfers of goods across divisions of the same company.


My department loses money if the transfer price is less than $30 per screen.
LCD Manager
I won't pay more than the $80 market price to buy this from LCD.
Phone Manager
$80 Market Price per Unit
$30 Variable Cost per Unit
$0
Negotiation Range

Learning Objective C1: Explain transfer pricing and methods to set transfer prices.

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Transfer Pricing: No Excess Capacity

The LCD division is producing and selling 100,000 units to outside customers.
(No excess capacity)

Transfer price = $80

LCD Division → LCD Displays → Phone Division

- With no excess capacity, the LCD manager will not accept a transfer price less than $80 per screen.
- This is a **market-based transfer price**.

Learning Objective C1: Explain transfer pricing and methods to set transfer prices.

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Transfer Pricing: Excess Capacity

The LCD division is producing and selling less than100,000 units to outside customers. **(Excess capacity)**

Transfer price = $50 to $80

- At a transfer price greater than $50, the LCD division can cover variable costs. This is **cost-based transfer pricing**.
- A negotiated price between variable cost and market price is called **negotiated transfer price**.

Learning Objective C1: Explain transfer pricing and methods to set transfer prices.

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Learning Objective A4

Compute the number of days in the cash conversion cycle.

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Cash Conversion Cycle

Measures average time it takes to convert cash outflows into cash inflows.

$$\text{Cash conversion cycle} = \text{Days' sales in accounts receivable} + \text{Days' sales in inventory} - \text{Days' payable outstanding}$$

Exhibit 24.20

Formulas for Components of Cash Conversion Cycle	
Days' sales in accounts receivable	$= \frac{\text{Accounts receivable, net}}{\text{Net sales}} \times 365$
Days' sales in inventory	$= \frac{\text{Inventory}}{\text{Cost of goods sold}} \times 365$
Days' payable outstanding *(Days' sales in accounts payable)*	$= \frac{\text{Accounts payable}}{\text{Cost of goods sold}} \times 365$

Learning Objective A4: Compute the number of days in the cash conversion cycle.

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Cash Conversion Cycle Applied

$ millions	Current year	Prior year
Accounts receivable, net	$ 1,430	$ 1,361
Net sales	$15,620	$16,563
1. Days' sales in accounts receivable	**33 days**	**30 days**
Inventory	$ 1,484	$ 1,414
Cost of goods sold	$10,056	$10,734
2. Days' sales in inventory	**54 days**	**48 days**
Accounts payable	$ 2,120	$ 2,047
Cost of goods sold	$10,056	$10,734
3. Days' payable outstanding	**77 days**	**70 days**
Cash conversion cycle (1) + (2) − (3)	**10 days**	**8 days**

Exhibit 24.21

Learning Objective A4: Compute the number of days in the cash conversion cycle.

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Learning Objective C2

Appendix 24A
Describe allocation of joint costs across products.

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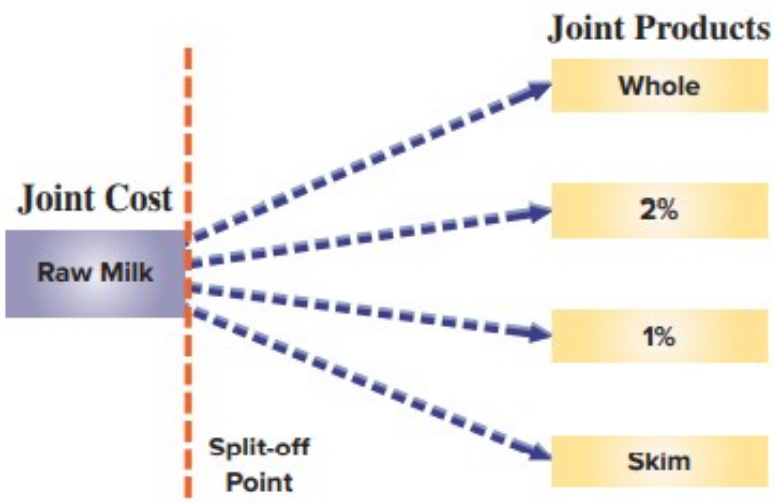
Joint Costs and Their Allocation

Joint costs are costs incurred to produce or purchase two or more products at the same time. Consider a dairy company that incurs joint costs when it processes raw milk.

Exhibit 24A.1



How should the joint costs be allocated to the different products?

Learning Objective C2: Describe allocation of joint costs across products.

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Allocating Joint Costs on a Value Basis

Joint costs of a dairy company include whole milk, 2% milk, 1% milk, and skim milk. This joint cost of $30,00 will be allocated to the different products based on the sales value of each product at the split-off point.

Type of Milk	Sales Value	Percent of Total	Allocated Cost	Gross Profit
Whole	$12,000	24%	$ 7,200	$ 4,800
2%	18,000	36	10,800	7,200
1%	16,000	32	9,600	6,400
Skim	4,000	8	2,400	1,600
	$50,000	100%	$30,000	$20,000

Exhibit 24A.2

$12,000 ÷ $50,000 = 24%

24% of $30,000 = $7,200

Learning Objective C2
products.

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End of Chapter 24

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